9K72 / R-17 - SS-1C/D/E SCUD-B/C/D

DATA FOR 2024 (standard update)
Complex 9K72 "Elbrus", missile R-17 / 8K14, SPU 2P19 - SS-1B SCUD-A
9K72 Elbrus complex, R-17/8K14 missile - SS-1C SCUD-B
9K72 Elbrus complex, R-17/8K14-1 missile - SS-1C SCUD-B
9K73 complex, R-17V missile / 8K114 ("helicopter")
9K72-O complex, R-17VTO / 8K14-1F Aerofon missile (with optical seeker) - SS-1E SCUD-D
R-300 is the export designation for the 9K72 missile system.
★★★★★

Operational-tactical missile system. The development was carried out in SKB-385 under the supervision of Chief Designer V.P. Makeev (Deputy Chief Designer - V.R. Serov, Lead Designer - Yu. Bobryshev) as part of the modernization of the R-11M missile under the R-11MU research project since 1957. As a result of the research, in December 1957, the SKB came up with a proposal to create an operational-tactical missile system with a range double that of the R-11M by replacing the engine with an engine with a turbopump unit and modifying the missile.

On February 24, 1958, documents were signed by the Military-Industrial Complex under the USSR Council of Ministers and Resolution of the USSR Council of Ministers No. 378-181 of April 1, 1958, which launched the creation of a system with an operational-tactical missile with an inseparable warhead based on the R-11M missile. The draft design was defended at NII-88 in September 1958, and the design documentation was completed in November 1958. Production of the pilot series and prototypes (R-17 - version 1 - OKB-3 engine) was carried out at the SKB-385 plant in Zlatoust in 1958-1959. In April 1959, the tactical and technical requirements of the GAU of the Ministry of Defense of the USSR for the missile were received. In May 1959, the TTT were approved, and the missile index was received GAU 8K14.

According to the Decree of the USSR Council of Ministers of June 17, 1959, serial production of R-17/8K14 missiles (R-17 - version 2 - OKB-5 engine - since 1962) was carried out at the Votkinsk Machine-Building Plant No. 235 (Votkinsk, series from 1959 to 1985). At the end of July 1959, assembly of the first two missiles for firing tests began. Assembly of missiles for flight tests began in August 1959.

Special thanks to "Pensioner" (http://russianarms.ru) for assistance in preparing materials.

8K14 missile of the 9K72 complex with the 9P117 SPU (photo by V.P. Makeyev Design Bureau)

Author: DIMMI Created: 23.03.2009 22:44:16 Comments: 114 READ THE FULL ARTICLE

RSD-10 Pioneer - SS-20 SABER

DATA FOR 2023 (standard update)
Complex 15P645 "Pioneer", missile 15Zh45 / RSD-10 / RT-21M - SS-20 SABER mod.1
Complex 15P645K "Pioneer-K" / "Pioneer-M", missile 15Zh45 / 15Zh46 (?) / RSD-10 / RT-21M - SS-20 SABER mod.1
Complex 15P653 "Pioneer-UTTH" / "Pioneer-2", missile 15Zh53, 15Zh54 / RSD-10UTTH - SS-20 SABER mod.2
Complex 15P656 "Gorn", missile 15Zh56
★★★★

Mobile ground missile system (PGRK) with a medium-range ballistic missile (MRBM). The system was developed by the Moscow Institute of Thermal Engineering (MIT), chief designer - A.D. Nadiradze, using the experience of creating and on the basis of the PGRK "Temp-2S" / SS-X-16 . The 15Zh45 missile was created on the basis of the 1st and 2nd stages of the mobile ICBM "Temp-2S" . The R&D project for the creation of the PGRK was called "15K645 "Pioneer". Work on the complex began in 1971.

The complex is designed to destroy strategically important stationary objects at a range of 600 to 5000 km.

Development of the complex began in accordance with the Resolution of the Council of Ministers of the USSR No. 280-95 issued on April 28, 1973 on the

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Rishat 2024-09-0
pr.11711 - IVA

development of the Pioneer complex by a cooperation of enterprises working on the creation of the Temp-2S ICBM complex . The resolution provided for the creation of an IRBM with a MIRV based on the 1st and 2nd stages of the Temp-2S ICBM. The start date for joint flight tests was set at the second quarter of 1974.

Cooperation of developers:
- MIT - lead developer of the complex, missile development
- TsKB "Titan" (Volgograd) - SPU and support vehicles for the complex
- Design Bureau of the Minsk Automobile Plant (Minsk) - SPU chassis
- NPO Soyuz (Lyubertsy) - solid propellant sustainer charges made of mixed fuel
- NPO Avtomatiki i Priborostroeniya (Moscow) - complex control system
- KB-1 VNIIEF - lead developer of 15Zh45 missile combat equipment

In December 1973, a draft design of the complex was released, which was successfully defended in the 1st quarter of 1974. Ground testing of the missile design elements began. The complex equipment, ground equipment units, combat unit structure, combat control scheme and means, combat duty procedure and daily operation were borrowed from the Temp-2S ICBM complex.

The thermonuclear charge for the warhead was developed by VNIITF up to the stage of pilot production for the UR-100K ICBM and its development for serial production for equipping the warhead of the 15Zh45 MRBM was completed in 1976 (source).

SPU 15U106 of the 15P645 "Pioneer" complex - SS-20 SABER in pre-launch position (processed photo from the collection "Weapons of Russia", MilitaryRussia.Ru, 2011).

Author: DIMMI Created: 31.07.2010 00:03:08 Comments: 436 READ THE FULL ARTICLE

2K6 Luna - FROG-3/4/5/6

DATA FOR 2024 (standard update)
Complex 2K6 "Luna", missile 3R5
Complex 2K6 "Luna", missile 3R9 - FROG-3
Complex 2K6 "Luna", missile 3R10 - FROG-5
Geophysical option - FROG-4
Installation Br-226-I (YAZ-214), missile 3P11 - FROG-6
R-30 is the export name of the complex.
★★★★

Tactical missile system. Preliminary development of the project began in 1953 at NII-1 (later renamed the Moscow Institute of Heat Engineering), chief designer N.P. Mazurov. Design work on the system began in full in accordance with Resolution of the USSR Council of Ministers No. 1302-660 of September 13, 1956 - a missile with a range of 40-45 km was created at NII-1 and a self-propelled launcher for it was created at TsNII-58 under the supervision of V.G. Grabin. Resolution of the USSR Council of Ministers No. 558-583 of May 16, 1957 on the creation of prototypes and testing was issued after the defense of the draft and technical designs of the system. The prototype of the 3R5 missile was manufactured by Plant No. 75 of the Kemerovo Economic Council. Experimental SPU and TZM were assembled by TsNII-58 in 1958. The complex testing began in 1958 (Kapustin Yar test site). After N.S. Khrushchev visited the test site in the fall of 1958, the TZM production was banned ("not effective"). From January 30 to February 28, 1959, the Mars and Luna systems were tested in low-temperature conditions at the Aginsky test site (Transbaikal Military District, 6 3R5 missile launches were conducted).

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SPU 2P16 of the 2K6 "Luna" complex with a 3R9 missile. In the background is a 3R10 missile. Parade on Red Square in Moscow, 1960s.

Author: DIMMI Created: 05.04.2009 18:20:37 Comments: 180 READ THE FULL ARTICLE

Tar

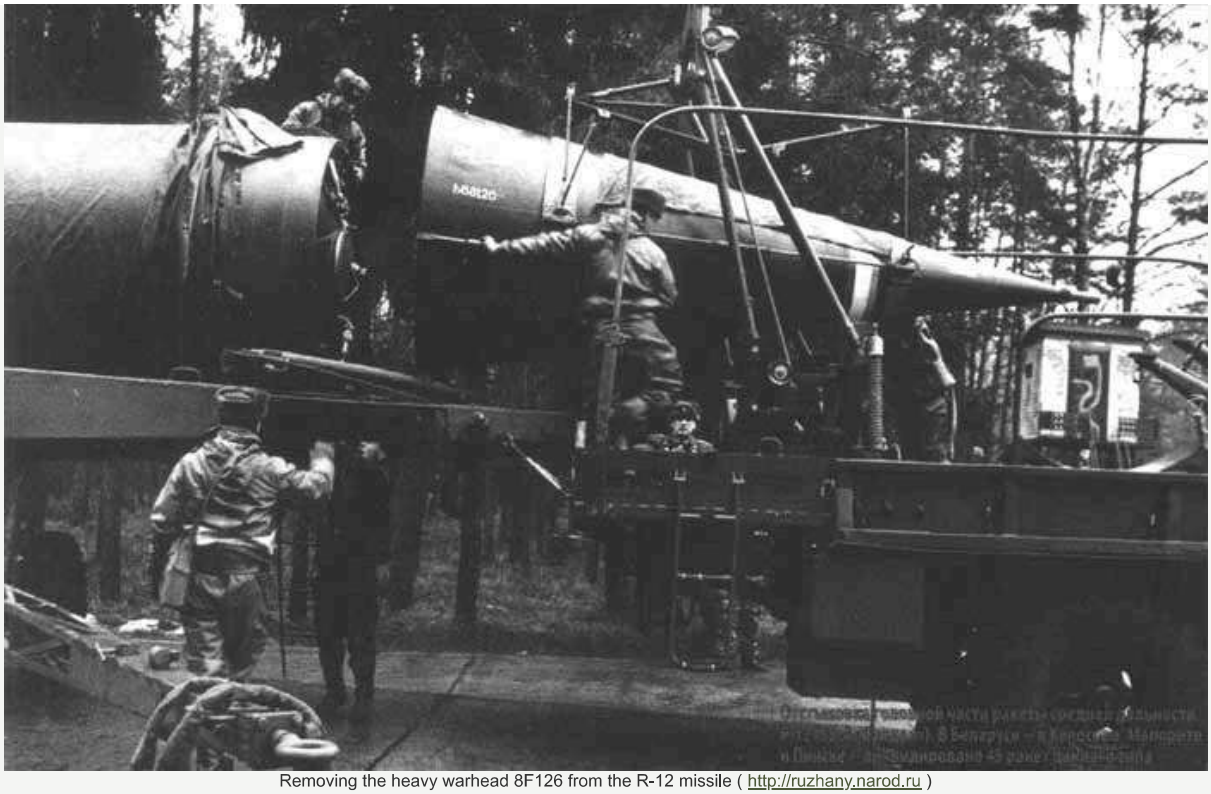
DATA AS OF 2024 (standard replenishment)
"Gudron" system
★★★

Nuclear charge amplification system. A set of means and technical solutions for increasing (enhancing) the power of nuclear charges developed in the late 1950s. Used in nuclear charges of the Strategic Missile Forces missile systems in the 1960-1970s.

In December 1957, in KB-11, under the leadership of S. B. Kormer, a unique result of increasing the power of a nuclear charge was obtained, which was called "Gudron". On December 28, 1957, at the Semipalatinsk test site, the RDS-9 charge with gas boosting was tested - in some sources called "product 19" (RDS-19) - the plutonium charge was boosted by a gas mixture of DT (deuterium + tritium). S. B. Kormer was engaged in gas boosting the efficiency of a nuclear charge . One of the reports said that the problem had no solution because the cavity of the product was filled with explosion products prematurely (1954). As a result, in December 1957, the product was prepared for testing and successfully tested. S. B. Kormer became a laureate of the Lenin Prize of the USSR in 1959.

By the end of the unilateral moratorium on nuclear tests (September 1958), nuclear charges were prepared that combined an increase in power with a simultaneous increase in combat readiness and safety of charge maintenance, and a decrease in cost. The developers took the path of using a more powerful explosive substance, and also applied an original scheme for increasing the power during the explosion of an atomic detonator (the "Gudron" system, source). The first test of a charge developed by KB-11 of a new type (probably with a charge amplifier) was successfully carried out at the Novaya Zemlya test site on 15.10.1958 (test No. 72, power 1500 kt, source). According to the recollections of nuclear testers, the units of the new charge, manufactured individually, turned out to be far from hermetic in operation, so they were delivered to the test sites by planes packed in two special shells: a container and a supercontainer, which were under excess pressure. The tests were supervised by Deputy Chief Designer (later Chief Designer and Director of the Institute, Academician) Yevgeny Arkadyevich Negin as the technical director on behalf of KB-11. The Chairman of the State Commission and the head of the tests was the Head of the Main Directorate of Experimental Designs (GUOK) of the Ministry of Medium Machine Building, Lieutenant General Nikolay Ivanovich Pavlov. Work with the "reactors" (amplifiers) was carried out in gas masks and was associated with the risk of radiation and contamination.

There is a hypothesis that in different years the "Gudron" amplifier used different principles of amplifying the power of a nuclear charge. At the first stage, this was amplification due to an additional charge of uranium-235 or plutonium (see above). Later, it was possibly gas amplification of the reaction using gaseous tritium or similar technology.



Removing the heavy warhead 8F126 from the R-12 missile (http://ruzhany.narod.ru)

Author: DIMMI Created: 11.04.2023 15:42:03 Comments: 1 READ THE FULL ARTICLE

Hazel

DATA FOR 2024 (replenishment required)
"Oreshnik" - SS-X-31B / SS-X-34

Medium-range ballistic missile. Developed by the Moscow Institute of Thermal Engineering (MIT). In July 2023, the country's leadership decided to develop a missile in a non-nuclear version based on the Rubezh ICBM. Probably, theoretical development of the creation of such a complex under the code name "Kedr" was carried out since 2022 or earlier. The missile is being created using the developments of other missile systems developed by MIT - "Yars", "Bulava", etc.

According to Western data, cooperation in the development of the missile system includes:
- Moscow Institute of Thermal Engineering - lead developer of the complex and the rocket;
- FNPC "Titan-Barricades" (Volgograd) - autonomous launcher and auxiliary vehicles of the complex;
- TsNIIAG (Moscow) - development of rocket control system devices
- FTsDT Soyuz - development of propulsion system
- OKB Prozhektor (Moscow)
- Concern "Sozvezdie" (Voronezh);
- NPP “Spetsenergomekhanika” (Moscow);
- Research Center of Special Equipment and Conversion “Continent” (Moscow).

According to Western data, missile tests began with a launch at the Kapustin Yar test site in October 2023 and continued with a launch in June 2024. The third test launch was a test-combat launch - on November 21, 2024, the missile (or missiles) were used against a combat target - the Yuzhmash production association in Dnepropetrovsk. The combat equipment of a new type is a MIRV with a cluster filling (6 x 6 warheads) or a set of missile defense missile systems.

Following the launch on November 21, 2024, the Commander-in-Chief of the Strategic Missile Forces S. Karakayev proposed accepting the Oreshnik PGRK into service.

Western sources consider the Oreshnik MRBM to be a modification of the RS-26 Rubezh ICBM (reconstruction of the RS-26 Rubezh from MilitaryRussia.Ru , version from 21.01.2018)

Author: DIMMI Created: 23.11.2024 07:21:01 Comments: 6 READ THE FULL ARTICLE

Missile indices of the RViA SV

DATA AS OF 2024 (standard update)
Indices of missile systems of the Missile Forces and Artillery of the Ground Forces of the Russian Federation
★★★

Indices of missile systems as of 2020:

Complex	Rocket	Western designation	SPU / APU	Rocket developer	Note
9K71 "Temp"	9M71	SS-12 SCALEBOARD / KY-06	9P11	MIT	
9K72 "Elbrus"	8K14	SS-1C SCUD-B	9P117	SKB-385	
9K73	8K114		9P115	SKB-385	helicopter
9K74	cruise missile 4K-95	SSC-1A SHADDOCK	9P116	OKB-52	helicopter
9K76 "Temp-S"	9M76	SS-12 / SS-22 SCALEBOARD	9P120	MIT	
9K77 "Record"	9M77	SS-1D SCUD-C/KY-03		SKB-385	
	cruise missile 9M78	SSC-1A SHADDOCK		OKB-52	
9K79 "Point"	9M79	SS-21A SCARAB-A / FROG-9	9P129	KBM	
9K711 "Uran"	9M711 (?)			MIT	
9K712 "Elbrus"	9M712 (?)			MIT	
9K713 (?) "Agate"	9M713 (?)	STERLITE		MIT	
9K714 "Oka"	9M714	SS-23 SPIDER-A	9P71	KBM	
9K715 "Iskander"	9M715 (?) / 9M723	SS-X-26 STONE		KBM	
9K716 "Volga"	9M716 (?)			KBM	
9K717 / 9K714U "Oka-U"	9M714U / 9M717 / 9M720	SS-23 SPIDER-B / KY-19	9P74	KBM	
9K718 / 9K79-1 "Tochka-U"	9M79-1 / 9M721			KBM	
9K719 (?) "Wave"	9M719 (?)			KBM	
9K720 "Iskander-M"	9M723-1	SS-26 STONE-A		KBM	
9K720 "Iskander-M"	9M728 / R-500	SS-26 STONE-C		Innovator	
9K722 "Iskander-MKR" (?)	9M729		9P701	Innovator?	
	9M730			Innovator	

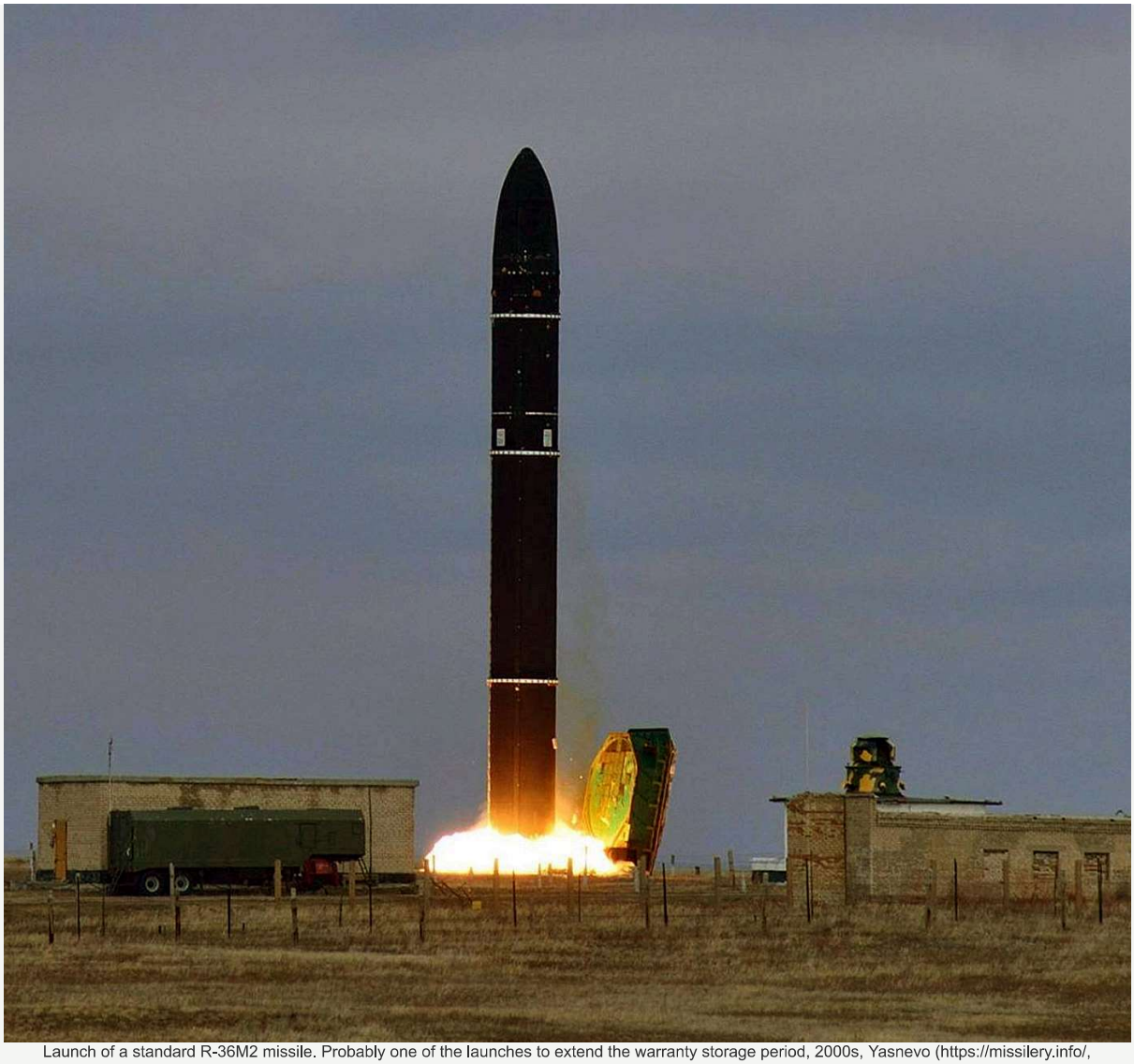
Author: DIMMI Created: 14.12.2020 00:26:47 Comments: 1 READ THE FULL ARTICLE

R-36M2 / RS-20V Voevoda - SS-18 mod.5-6 SATAN

DATA FOR 2024 (standard update)
Complex 15P018M "Voevoda", missile R-36M2 / 15A18M / RS-20V / mono MS 15F175 - SS-18 mod.5 SATAN / TT-09
Complex 15P018M "Voevoda", missile R-36M2 / 15A18M / RS-20V / MIRV IN 15F173 - SS-18 mod.6 SATAN
★★★★
Author of the original article: Maksim Pashnev (Obninsk), 2012.

Fourth-generation intercontinental ballistic missile. The system and the missile were developed at the Yuzhnoye Design Bureau (Dnepropetrovsk, Ukraine) under the supervision of Academician of the USSR Academy of Sciences V.F. Utkin in accordance with the tactical and technical requirements of the USSR Ministry of Defense and Resolution of the CPSU Central Committee and the USSR Council of Ministers No. 769-248 of August 9, 1983. Chief designers were S.I. Us and V.L. Katayev. After V.L. Katayev was transferred to the apparatus of the CPSU Central Committee, he was replaced by V.V. Koshik. The Voevoda complex was created as a result of the implementation of a multilateral improvement project for the R-36M UTTKh/15P018 heavy-class strategic complex with the 15A18 heavy-class ICBM and is designed to engage all types of targets protected by modern missile defense systems in any combat conditions, including multiple nuclear impacts on a position area (guaranteed retaliatory strike, *source - Strategic missiles*).

In June 1979, the Yuzhnoye Design Bureau developed a technical proposal for the Voevoda missile complex with a fourth-generation heavy liquid-propellant ICBM under the index 15A17. The preliminary design of the missile complex with the R-36M2 Voevoda ICBM (the ICBM index was changed to 15A18M in order to ensure compliance with the requirements of the SALT-2 Treaty) was developed in June 1982. At the same time, in June 1982, the preliminary design of the ICBM complex control system was released.



Launch of a standard R-36M2 missile. Probably one of the launches to extend the warranty storage period, 2000s, Yasnevo (https://missilery.info/, processed).

Author: DIMMI Created: 02.10.2011 21:17:16 Comments: 163 READ THE FULL ARTICLE

GR-1 / 8K713 - SS-X-10 SCRAG (wrong)

DATA AS OF 2024 (standard replenishment)
GR-1 / 8K713 - SS-X-10 SCRAG (erroneous)
★★★

Intercontinental ballistic missile (ICBM) / global missile. The missile was developed by Special Department No. 3 (headed by Sergei Sergeevich Kryukov) of OKB-1 of General Designer S.P. Korolev since 1961. Letter from OKB-1 dated 09/07/1961 "On the possibility of creating a GR based on the R-9A and R-7A" addressed to: Smirnov L.V., Kalmykov V.D., Moskalenko K.S. Further - a report addressed to N.S. Khrushchev from 22.02.1961 "On the new scheme of intercontinental missiles GR" signed by S.P. Korolev, Mishin, Ryazansky, Pilyugin, Kuznetsov. Further - proposals for developments of OKB-1 including GR-1 from 05.03.1962 addressed to Ustinov, Malinovsky, Smirnov, Moskalenko, Semenov and Serbin. The design of the global missile was carried out with the expectation of using the R-9M

- 8K77 variant of the propulsion systems on the first and second stages , and the S1.5400 propulsion system on the third stage. As a result of the development of the missile, design and operational documentation was released. The operation of the missile was assumed with the same limitations and features as the operation of the R-9 missile . At the end of 1961, a proposal from OKB-1 was accepted to develop a rocket with NK-9 engines by Chief Designer N.D. Kuznetsov and an 11D726 engine from OKB-1 (*source - Mishin*). The preliminary design for the GR-1 with NK-9 engines on the 1st and 2nd cruise stages and an 8D726 liquid-propellant rocket engine on the 3rd stage was completed in April 1962 (*source - Mishin*). Officially, the development of the missile was started by Resolution of the Central Committee of the CPSU and the Council of Ministers of the USSR No. 1021-436 of May 12, 1962, Resolution No. 1021-438 of September 24, 1962 and Order of the State Committee for Defense Technology (GKOT) No. 640/06 of October 13, 1962. On December 18, 1962, the GKOT board for GR-1 adopted the following work plans: 1. 3rd quarter of 1963 - begin testing at site No. 51 of the Baikonur test site. In August 1963, the USSR Ministry of Defense must re-equip site 51 for the GR-1 ICBM. 2. 1st quarter. 1963 - submit proposals on landing routes and modes (MO with GKOT and GKRE) 3. 1st quarter of 1963 - comprehensive design assignment for the combat launch station] (BSS) of the GR-1 missile. Tactical and technical requirements for the GR-1 missile began to be developed on 02.01.1963 and agreed with the customer on 15.02.1963. On March 23, 1963, OKB-1 defended the preliminary design of the GR-1. In 1962, preparation of a series of missiles for flight tests began. According to various sources, a total of 3-4 missiles were produced. At least two missiles of this series later took part in parades in Moscow. The missiles were produced at the Experimental Machine-Building Plant OKB-1 in Kaliningrad, Moscow Region, and also at the Progress plant (Kuibyshev).

On December 6, 1963, by order of the commander of military unit 44275, an ad hoc technology group was created at the Baikonur Cosmodrome to test the

8K713 missile at site No. 51. In 1964, test group No. 3 of the same military unit, which had previously worked on testing the 8K75 / R-9 ICBMs, joined the work (numbering 169 people).

On February 6, 1964, at a meeting with S.P. Korolev, arguments were first voiced about the inexpediency of fine-tuning the GR-1, as well as the possibility of developing a light space launch vehicle based on it and a large anti-missile. On February 14, 1964, proposals were presented for a missile defense system based on the GR-1. On May 3, 1964, during bench tests of Block B of the GR-1 (2nd stage), an explosion and fire occurred (at the 23rd second of the block's operation). On May 14, 1964, a decision was made to terminate the development of the GR-1. Officially, the development of the GR-1 missile and its modifications was terminated in July 1964 "in connection with the fulfillment by the USSR of its obligations not to use outer space for military purposes." On August

17, 1965, a letter from S.P. Korolev was sent to the leadership of the USSR Ministry of Defense with a proposal to use the GR-1 to intercept satellites (possibly, the missile index is 8M111).

Special thanks for preparing a selection of sources on the missile to the user "S-300" of our site and forum .

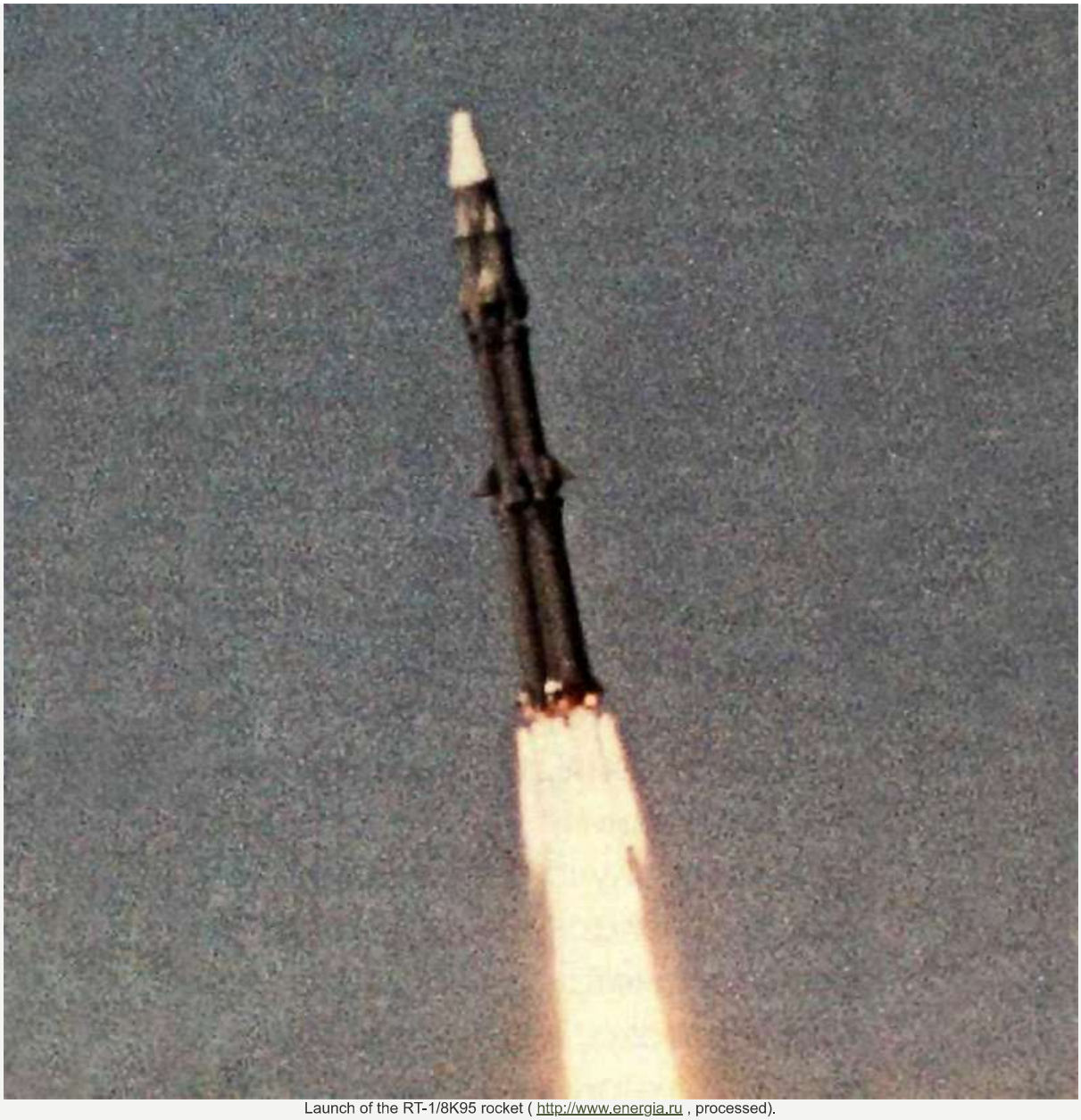
GR-1 missiles on Red Square, parade on November 7, 1965 (RGANTD, http://www.rusarchives.ru/).

Author: DIMMI Created: 29.03.2014 23:16:27 Comments: 10 READ THE FULL ARTICLE

RT-1/8K95

DATA FOR 2024 (standard update)
Missile RT-1 / 8K95
Missile RT-1-63 / 8K95-63
★★★

An experimental solid-fuel medium-range ballistic missile. By the Resolution of the Council of Ministers of the USSR of June 27, 1958, a branch of OKB-1 was created on the basis of V.G.Grabin's TsNII-58, which was engaged in the development of solid-fuel missiles. The creation of the missile was started by the Resolution of the Council of Ministers of the USSR No. 1291-570 of November 20, 1959 "On the creation of the RT-1 product and the implementation of work on the RT-2 topic". The resolution determined the list of missile developers:
- OKB-1 GKOT (Chief Designer S.P.Korolev, Deputy Chief Designer for Solid-Fuel Missiles I.N.Sadovsky) - for the missile and the complex as a whole;
- KB-11 of the Ministry of Medium Machine Building (chief designers Negin, Kocharyants) - for a special charge with automation, initiation system, power supply, contact and non-contact sensors, control and measuring equipment and technological equipment for assembly and testing of a special charge at technical and launch positions;
- NII-125 of the State Committee on Defense Industry (chief designer - B. Zhukov, deputy chief designers - Smirnov and Pobedonostsev) - for the creation of solid fuel - the product "Nylon-B", industrial technology for its production, charges and engines. The development and testing of engines were to be carried out jointly with OKB-1;
- NII-885 of the State Committee on Defense Electronics (chief designers - Ryazansky, Pilyugin) - for the control system as a whole;
- NII-944 of the State Committee on Shipbuilding (chief designer - Kuznetsov) - for gyroscopic instruments;
- NII-627 and VNIT GK for automation and mechanical engineering (chief designers - Iosifyan and Lidorenko) - for on-board electrical equipment and current sources;
- GSKB Spetsmash GKOT (chief designer - Barmin) - for a complex of ground launch, docking, lifting and transport, compressor, auxiliary equipment and the development of combat launch stations;
- OKB-686 of the Moscow Economic Council (chief designer - Goltsman) - for a complex of ground electric power equipment. According to the Resolution, in May 1960 the developers had to present a preliminary design for the RT-1 rocket and variants of combat launch stations (a complex of ground equipment). The development of engines was carried out by NII-125 with the participation of the OKB-1 design team. The preliminary design of the 8K95 product was released in August 1960. Testing of the RT-1 missiles with a combined control system was planned to begin in the 4th quarter of 1960, and with an autonomous control system - in the 4th quarter of 1961. The testing location was the State Central Test Site Kapustin Yar.



Launch of the RT-1/8K95 rocket (http://www.energia.ru , processed).

Author: DIMMI Created: 27.01.2013 00:35:58 Comments: 22 READ THE FULL ARTICLE

Warheads and warheads of missile systems of the Strategic Missile Forces

DATA AS OF 2024 (standard replenishment)
Warheads and warheads of the Strategic Missile Forces missile systems (ICBMs and MRBMs)
★★★★

Single-block warheads:

Name	Type	Launch vehicle	Complex	Chronology	Description
46A / RDS-46A	GC	R-7/8K74		1959	Serial warhead with thermonuclear charge RDS-46A
8F12 / 8F12N	GC	8K63			Warhead (source). Probably "product 49". Light warhead weighing 1364 kg. The missile was accepted into service with this warhead in 1959.
8K15	GC	8K65			Light thermonuclear warhead (source). Power - 2.3 Mt, weight - 1546 kg
8F17	GC	UR-500/8K82 "Proton"	K8K82	project	Heavy thermonuclear warhead with a capacity of 150 Mt
8F61	GC	8K64			(source)
8F112	GC	8K66			(source)
8F114	GC	UR-200 / 8K81			(source)
8F115	GC	8K64, 8K65			Lightweight warhead (source). Lightweight warhead with a parachute system (?).
8F116	GC	8K64, 8K65			Heavy warhead, weight - 2175 kg, power 5 Mt.
8F117	GC	8K64, 8K65 , UR-500 / 8K82			Heavy warhead (source). Weight - 2200 kg, power 6/10/15 Mt (according to different sources). According to other sources, weight is over 12 t.
8F121	GC	8K84	UR-100 / 8K84	19.04.1965 (first launch)	Single-block light warhead (source). Thermonuclear warhead RA50 with a capacity of 1 Mt developed by NII-1011 (Chelyabinsk-70, now VNIITF)
8F125	GC	8K84			(source)

8F126 / AA48-2	GC	8K63			Heavy thermonuclear BB, yield - 2.3 Mt, weight - 1680 kg. (source). Improved version of AA48-2 with improved safety of the warhead (source)
8Ф128	GC	8K63U			Probably variant BB 8F126 (source)
8Ф671	GC	8K67 (R-36)			Heavy GC (source)
8Ф672	GC	8K67 (R-36)			Lightweight GC (source)
8Ф74 / 8Ф674	GC	8K67 (R-36)			Light warhead (source). The warhead was tested starting from the first launch of the carrier on September 28, 1963. The charge is R-354-G (source)
8F675 / 8F675-6000 / 8F675-7000 / 8F675U	GC	8K67 (R-36)			Heavy warhead (source). Charge A-604-G (source)
	GC	"Dwarf"			Single-block nuclear warhead with a complex of means to overcome missile defense (KSP PRO, developed by NII-108)
15F842 GC, 15F842P1 "Lead" / 15F842P3, 15F843 BB	GC	8K84 , 8K84M	UR-100 / 8K84 UR-100UTTH / 8K84M	0.09.1967 (first launch)	Light warhead (source). Length - 1.45 m, Diameter - 1.25 m, Weight - 760/800 kg. Charge with a capacity of 500 kt developed by KB-11
15F992U	GC	8K84U			(source)
15F1	GC	8K98			GC case (source)
15F981	GC	8K98			GC case
15F982	GC	8K98P			GC case
15F993	GC	8K99			Light warhead body (source)
15F141 / 15F141-500	GC	8K67MA (R-36) / 15A14 (R-36M)			Single-block heavy warhead with a charge capacity of 20 Mt, 15B85 case (source)
15F142 / 15F142-500	GC	15A14 (R-36M)			Single-block light warhead with a charge capacity of 8 Mt, 15B86 case (source)
15F156	GC	15A15			Lightweight monoblock warhead. Not mass produced (source)
15F171 / 15F172	GC	15A18M (R-36M2)			Heavy monoblock warhead, platform 15F171 (source), VNIIEF charge
15F175 / 15F175-2 / 15F176	GC	15A18M (R-36M2)			Light single-block warhead. 15F175 - platform, 15F176 - warhead (source), VNIIEF charge
15F202	GC	UR-100K / 15A20			The case of a monoblock warhead (source). Charge RA64 (VNIITF)
15F421	GC	RS-14/15Zh42 "Temp-2S"	15P642		Thermonuclear warhead with a set of decoys, yield 650-1450 kt, warhead weight - not less than 650 kg
15F483	GC	15Ж48			(source)
15F581 / AA88	GC	15Ж58 "Topol"			Single-block warhead of the Topol ICBM, AA88 charge (source)

Author: DIMMI Created: 09/14/2016 23:58:17 Comments: 37 READ THE FULL ARTICLE

Iskander-1000 - SS-X-33

DATA FOR 2024 (standard update)
"Iskander-1000" (conditionally) - SS-X-33

Medium-range ballistic missile of the universal modular missile system based on the technical solutions of the 9K720 Iskander-M OTRK is being developed as of 2024 at the Machine-Building Design Bureau (Kolomna). On

June 28, 2024, V.V. Putin announced the possibility of starting the production and deployment of medium- and shorter-range missiles in response to similar actions by the United States outside their national territory. Earlier, on December 17, 2023, the Commander-in-Chief of the Strategic Missile Forces of Russia noted that the Russian military-industrial complex can begin production of serial models of missile systems with medium- and shorter-range missiles in the shortest possible time. On May 6, 2024, the Russian Ministry of Foreign Affairs announced the start of production of medium- and shorter-range missile systems.

One of the variants of such a complex with a range of up to 1000 km could be the upgraded 9K720 Iskander-M ballistic missile with an updated engine, control system and improved warhead.

The new missile for the Iskander-M was first demonstrated in a video for the 78th anniversary of the Kapustin Yar test site on May 15, 2024.

The name "Iskander-1000" is conditional and unofficial.

A launch pad with a new type of missile at the Kapustin Yar test site (first published on 15.05.2024, source)

Author: DIMMI Created: 24.07.2024 07:59:44 Comments: 4 READ THE FULL ARTICLE

RT-2PM2, RS-12M1 / RS-12M2 Topol-M - SS-27 SICKLE-B

DATA FOR 2024 (standard update, v.2)
R&D "Universal" / R&D "Topol-M", missile 15Zh55 / 15Zh65 - SS-X-27 SICKLE-B
Complex RS-12M1 "Topol-M" / 15P155 (PGRK), missile RT-2PM1 / 15Zh55 - SS-27 SICKLE-B
Complex RS-12M2 "Topol-M" / 15P165 (ShPU), missile RT-2PM2 / 15Zh65 - SS-27 SICKLE-B

★★ Intercontinental ballistic missile (ICBM) / road-mobile missile system (PGRK). The complex and missile were developed by the Moscow Institute of Thermal Engineering (MIT), chief designers are Boris Nikolaevich Lagutin and Yuri Semenovich Solomonov (in different years, source). By Resolution of the Council of Ministers of the USSR No. 173-45 of February 9, 1987, it was prescribed to begin simultaneously at NPO Mashinostroyeniya (Reutov, the Albatross project), at KB Yuzhnoye (Dnepropetrovsk) and at the Moscow Institute of Thermal Engineering work on the development of promising ICBMs with the ability to overcome the multi-echelon missile defense system of a potential enemy with universal basing - with launch options from silo launchers and in the form of a PGRK (*source - Strategic missiles, source*). Work at KB Yuzhnoye was carried out on the Universal R&D - a solid-fuel ICBM was being developed in PGRK and silo launcher variants. At MIT, work was carried out on the Topol-M R&D - the development of an ICBM to replace the Topol ICBM with two types of basing - PGRK and silo launchers. In August 1988, Yu.S.Solomonov (MIT) held talks with the Yuzhnoye Design Bureau, as a result of which by the end of 1988 the two design bureaus had jointly developed a technical proposal for a single missile within the framework of the Universal research project (*historical - Strategic missiles*). Full-scale development of the RT-2PM2/15Zh65 missile was started jointly by MIT and the Yuzhnoye Design Bureau by decision of the USSR Military-Industrial Complex No.323 of 09.02.1989 on the subject of the Universal research project. The design was planned to be completed by the end of 1991 in two versions - a missile with a platform for distributing unguided warheads with solid-propellant rocket motors and without a missile defense overcoming means complex (MRC) - developer MIT (mobile missile complex, PGRK), a similar missile with a platform for distributing warheads with a monopropellant liquid engine and with a MRC MRC - developer - Yuzhnoye Design Bureau (Dnepropetrovsk, silo missile complex 15P065). Due to a number of production reasons, the missiles differed in the design of the TPK and therefore had some differences and received different indexes - 15Zh55 for PGRK and 15Zh65 for PU (*historical - Strategic missile*). The development of the 1st stage, the version of the warhead dispensing platform and the missile's nose cone was carried out by the Yuzhnoye Design Bureau, the development of the 2nd and 3rd stages, the instrument compartment, its own version of the warhead dispensing platform and the unguided warhead was carried out by MIT. The 1st stage engine,The head fairing and the second version of the platform for breeding with a monopropellant engine were developed by the Yuzhnoye Design Bureau (*source - Rockets and spacecraft* , ★★

Strategic missiles). At the end of 1989, a joint preliminary design of the missile and silo version of the missile system was released. In the first half of 1990, a preliminary design of the PGRK was released (*historical - Strategic missiles*).

The first flight model of the 1L version of the missile by the Yuzhnoye Design Bureau was assembled and prepared for testing at the Plesetsk test site in December 1991. The missile's shipment from the plant to the test site was cancelled by the decision of the Commander-in-Chief of the USSR Strategic Missile Forces. In 1991, MIT began forming an adjusted cooperation of developers with an emphasis on Russian enterprises (*historical - Strategic missiles*). In 1992, after the appeal of the General Designer of the Yuzhnoye Design Bureau S.N. Konyukhov to the President of Russia B.N. Yeltsin, a meeting was convened to discuss the continuation of the joint development of ICBMs. The decision was not made and in April 1992 the participation of the Yuzhnoye Design Bureau in the development of the missile was terminated (*source - Missiles and spacecraft...*). In 1992, an addendum to the preliminary design of the Topol-M ICBM was issued, taking into account changes in the cooperation of developers - the engine of the 1st stage of the missile was now being developed by NPO Iskra (Perm). The main basing option for the silo version was the option using the launch site and silos of the UR-100NUTHH systems with 15A35 missiles after modernization of the launch equipment (developed by the Vympel Design Bureau, Moscow). The addendum to the preliminary design also provided for the use of silos of the R-36MUTTH and R-36M2 missiles in the event of a complete reduction of these missiles under the START-2 treaty, which could happen (*source - Strategic missiles*).

By the Decree of the Government of the Russian Federation No. 7-2 of 06.01.1993 and the Decree of the President of the Russian Federation Boris Yeltsin No. 275 of 22 February 1993 "On the creation of the Topol-M missile system and the serial production of the Topol-M missile system", MIT became the lead enterprise for the development of the Topol-M. A decision was made to develop a unified missile with only one version of combat equipment - with a solid-fuel propulsion system of the combat stage. After which the developments on the RT-2PM2 version with a KSP PRO and a monopropellant engine of the dispersal platform were transferred from the Yuzhnoye Design Bureau to the Moscow Institute of Thermal Engineering. A sample of the 1L missile was transferred to Russia on 15 January 1995 (*source - Rockets and spacecraft...*).

Launch of the 15Zh55 rocket of the Topol-M complex (2008 or earlier)

Author: DIMMI Created: 07.01.2018 19:05:17 Comments: 45 READ THE FULL ARTICLE

Complex 9K76 Temp-S, missile 9M76 - SS-12 / SS-22 SCALEBOARD

DATA FOR 2024 (standard update)
9K76 "Temp-S" complex, 9M76 / "TR-1" missile - SS-12A SCALEBOARD-A / KY-11
Complex 9K76 "Temp-S", missile 9M76B / "TR-1" - SS-12A SCALEBOARD-A
9K76 "Temp-S" complex, 9M76B1 / "TR-1M" / "mod.9M76B" / 9M76M (?) missile - SS-12B / SS-12M / SS-22 SCALEBOARD-B
★★★★★

Front-level missile system / operational-tactical extended-range missile system. The system was developed at NII-1 (since 1967 - Moscow Institute of Thermal Engineering) under the supervision of A.D. Nadiradze.

After the formulation of mixed solid fuel was developed at NII-125 (later renamed NIKHTI, and later - NPO "Soyuz", Lyubertsy) under the supervision of future academician B.P. Zhukov, in 1961 at NII-1 under the supervision of A.D. Nadiradze, design assessments were conducted for the creation of a new ballistic missile with a solid-propellant rocket motor on this new type of fuel.

Full-scale development of the Temp-S complex was started by Resolution of the USSR Council of Ministers No. 934-405 dated September 5, 1962 by the following cooperation of enterprises:
- NII-1 (MIT since 1967) - prime contractor for the complex and missile
- NII-592 (N.A. Semikhatov) together with the Miass Mechanical Plant (chief designer - Yu.A. Buynov) - missile control system
- NII-125 (NPO Soyuz, M.I. Rusin) - solid propellant charge of the engine
- Design Bureau of the Barrikady plant (Volgograd) - self-propelled launcher and other ground equipment)
- KB-11 (VNIIEF, E.N. Negin, S.G. Kocharyants) - thermonuclear warhead

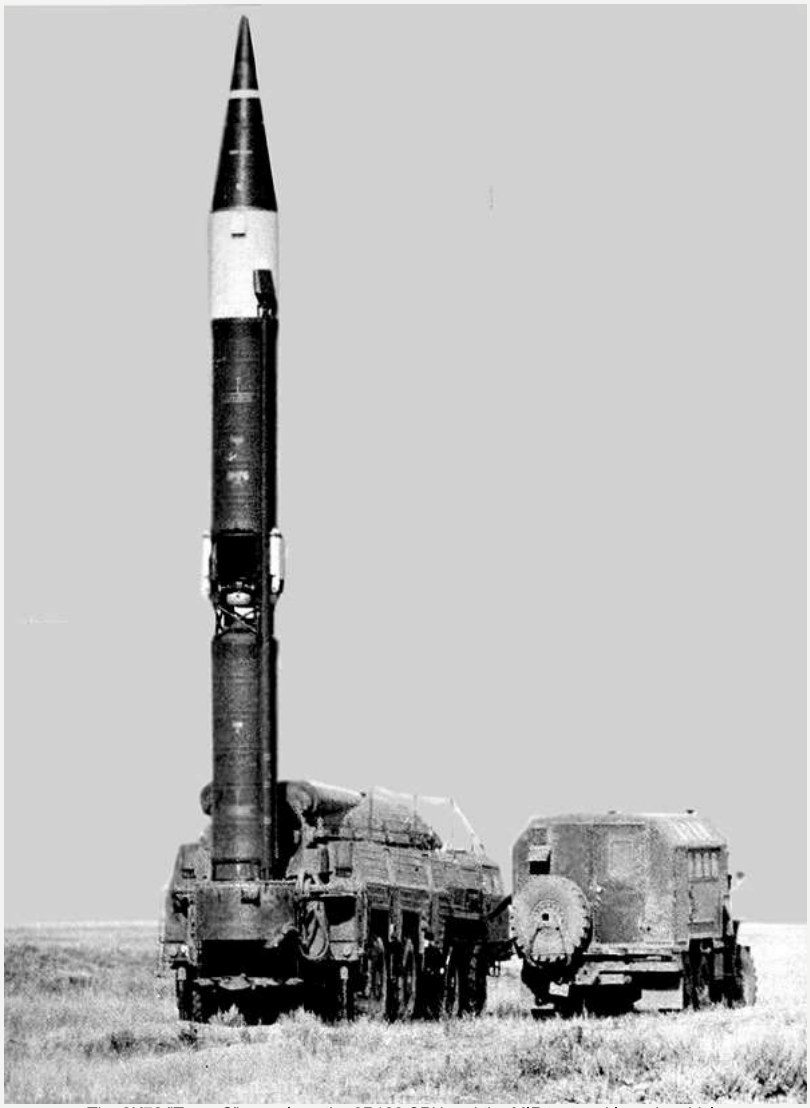
The missile and complex were created using the developments on the Temp theme . The preliminary design of the complex was approved on December 13, 1962. According to the preliminary design, the missile was to use a variable-yield thermonuclear charge "906V" with a warhead with a "skirt". The missile's performance characteristics were set with a range of 300-900 km. Additional studies were conducted to expand the temperature range of the missile's combat use in the range from –10 °C to +40 °C, instead of the 25±10 °C adopted at the beginning of development. In addition, the developer committed to conducting studies to increase this range to –30 °C.

In 1962, by Resolution of the USSR Council of Ministers, preparations for the production of 9M76 missiles began at the Votkinsk Machine-Building Plant No. 235 (Votkinsk).

In May 1963, the project of the missile and the complex was presented to the GRAU. However, even at the development stage, the council of chief designers, on its own initiative, approached the supervising profile committees and ministries with a proposal to use a special charge "910" in the creation of the missile. After adjusting the draft design in accordance with the Resolution of the Council of Ministers No. 517-180 of May 8, 1963, the special charge "910" (both developed by KB-11 / VNIIEF), which was 105 kg lighter, was introduced into the project. This made it possible to abandon a number of devices that helped stabilize the missile in flight. Thus, abandoning the stabilizing skirt made it possible to reduce the length of the missile from 13.5 to 12.5 meters, which improved the placement of the missile on the launcher and made the missile transportable using the available means. Changes in the design required the development of additions to the draft design of the missile and the complex. The updated draft design was reviewed in December 1963.

By mid-1963, the experimental design work on the Temp-S project was significantly behind schedule, threatening the submission of the complex for joint flight tests (JFT). At a meeting of the USSR Supreme Council of National Economy Commission on Military-Industrial Issues on July 24, 1963, the activities of research and development, research and production enterprises and relevant ministries tasked with developing the 9K76 complex were criticized. In accordance with the Commission's decision, the enterprises developing the missile and complex components were required to eliminate the identified deficiencies, fulfill delivery plans, and ensure the fulfillment of the established JFT deadlines (fourth quarter of 1963), as set by the Resolution of the CPSU Central Committee and the USSR Council of Ministers of May 8, 1963.

Special thanks to "Pensioner" (http://russianarms.ru) for assistance in preparing the materials.



The 9K76 "Temp-S" complex - the 9P120 SPU and the MIP test and launch vehicle
("60 years in service at the Kapustin Yar test site. 1946-2006, GTsMP "Kapustin Yar", 2006).

Author: DIMMI Created: 14.04.2009 22:32:47 Comments: 177 READ THE FULL ARTICLE

Complex 9K720 Iskander - SS-26 STONE - Complex structure and chronology

DATA FOR 2024 (standard update, v.2)
Complex 9K720 "Iskander-M" - SS-26 STONE-A
★★★★★

Complex structure, deployment and chronology.

SPU 9P78-1 with cruise missiles R-500 of the missile system 9K720 "Iskander-M" of the first serial brigade set on the day of transfer of equipment to the 107th RBR. Kapustin Yar, 28.06.2013 (http://i-korotchenko.livejournal.com).

Author: DIMMI Created: 10.01.2015 20:45:52 Comments: 23 READ THE FULL ARTICLE

Combat equipment of the 15A28 Sarmat ICBM

Warhead of the 15A28 Sarmat ICBM

There are hypothetically several options for the warhead of the 15A28 ICBM:

1. Classic warhead of an ICBM with a MIRV - conventional unguided ballistic warheads. Probably developed with the participation of VNIIEF - work is underway there on the Sarmat-P program (2018). There may be at least 10-14 such warheads. With a set of means to overcome missile defense systems.

2. Aeroballistic hypersonic warheads (AGBO) - an estimated 3 to 5 guided warheads of the Object 4202 / 15U71 type (this is a forecast).

Here we would like to consider the factors that may influence the choice of the power of conventional warheads, since the following options are possible: low-power blocks (150 kt), medium-power blocks (300-500 kt) and high-power blocks (0.8-1 Mt). Discussions on this topic are, of course, of a "captain's" nature and are completely obvious, but apparently this is precisely what is called "analytics" in the capitals.

The choice of the power of the warheads for the Sarmat ICBM may depend on a number of factors:

1. Strategic doctrine and nuclear deterrence issues are likely to be the fundamental factors in choosing the power of warheads. The quantity and power of a country's nuclear arsenal should correlate with strategic doctrine, which may prioritize mass deterrence or precision strikes. In the case of the Russian Federation, we are talking more about mass deterrence, and therefore this is an argument in favor of increasing the power of warheads. Here we can also add the psychological effect of having megaton-class warheads in the ICBM arsenal, which, incidentally, does not prohibit the deployment of missiles with warheads of a lower power class.

2. Tasks, purposes and accuracy of BB guidance. Of course, this is also one of the determining factors in choosing the power of warheads. In conditions of reduced requirements or impossibility of achieving the required indicators for the accuracy of BB guidance, compensation can be achieved by increasing the power of warheads to level out possible deviations. Again, if the targets of the Sarmat ICBM strikes are point targets - silos of the potential enemy's ICBMs, then with insufficient accuracy of the ICBM, it is also necessary to increase the power of the BB. Although, when using ICBMs as a means of nuclear deterrence, the main targets of the missiles will most likely be strategic infrastructure facilities, military bases, urban agglomerations, where megaton-class munitions also look preferable from the point of view of the deterrent factor of potential possible damage.

The warhead stage and the warhead of the 15A18M ICBM at the Strategic Missile Forces training center, 2022 (Russian TV).

Author: DIMMI Created: 23.04.2024 08:45:29 Comments: 0 READ THE FULL ARTICLE

R-3 / R-3A (project)

DATA FOR 2024 (standard update)
R-3 / 8A67
Missile R-3A
★★★

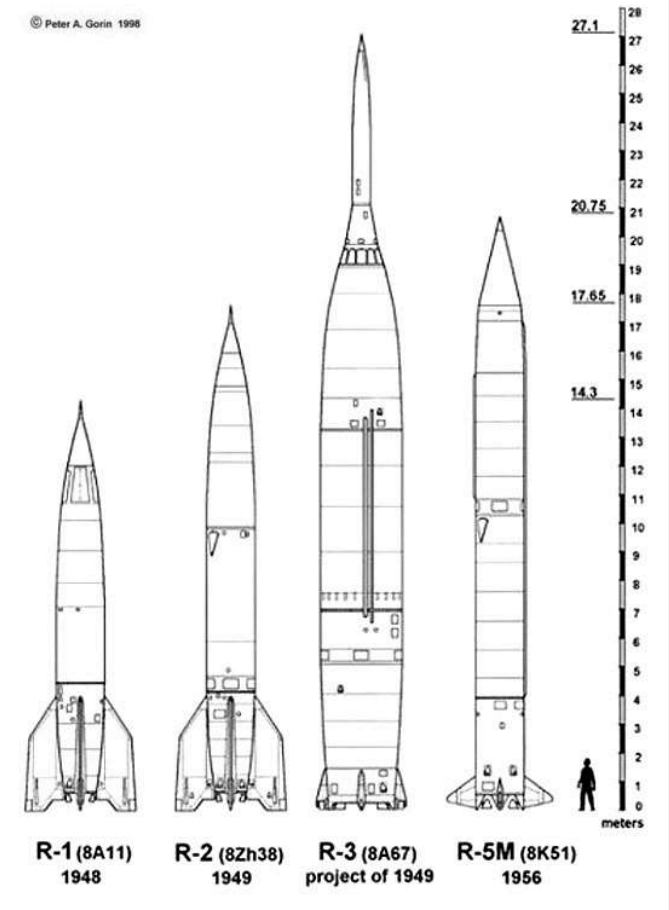
Long-range ballistic missile project. Development of the project for a missile with a range of 3,000 km was started by the Resolution of the USSR Council of Ministers dated April 14, 1947 at NII-88 under the general supervision of S.P. Korolev. A Council of Chief Designers was formed to work on the project:
- missile - S.P. Korolev (NII-88);
- command devices - V.I. Kuznetsov (NII-944 created in 1947);
- liquid-propellant rocket engine - V.P. Glushko (OKB-456);
- ground equipment of the launch complex - V.P. Barmin;
- autonomous control system - N.A. Pilyugin;
- radio correction system - M.A. Ryazansky.

The preliminary design of the missile consisted of three sections: on the R-3 missile (Department No. 3 of S.P. Korolev Research Institute-88, leading layout designers K.D. Bushuyev and S.S. Kryukov), on the propulsion system (OKB-456 V.P. Glushko on a competitive basis with Research Institute-1 MAP under the supervision of A.I. Polyarny), and on the control and monitoring systems (chief designers N.A. Pilyugin and M.S. Ryazansky). Several missile variants were being developed: BN - normal ballistic (single-stage), BS - ballistic composite, KN - normal winged (single-stage), KS - winged composite.

The preliminary design of the R-3BN missile variant was completed in June 1949. In November-December 1949, the project was discussed at specialized sections of the Scientific and Technical Council of NII-88, and on December 7, 1949, the preliminary design was approved by the Scientific and Technical Council of NII-88. The Scientific and Technical Council recommended the creation of an experimental scaled-down R-3A missile model to test the technical solutions of the R-3 project. The design of the experimental R-3A missile based on the technical solutions of the R-2 missile was started, and flight tests were scheduled for October 1951.

Changes in the design of the R-3A missile made it possible to expect a flight range of up to 935 km with a launch weight of 23,400 kg, an engine thrust of 40 tons, and a dry missile weight of about 4 tons. Design studies showed that by slightly complicating the task, it was possible to obtain a qualitatively new result and, bypassing the experimental stage, immediately create a design for a new combat missile - such a missile became the 8 A62 / R-5 missile, the design of which began in 1950-1951.

For work on the R-3 project and other long-range missile projects, on April 24, 1950, the USSR Council of Ministers issued a Resolution on the establishment of OKB-1 and the appointment of S.P. Korolev as its head and chief designer. In October 1951, Korolev approached the Minister of Armaments D.F. Ustinov with a request to approve in principle the transfer of the project of the experimental R-3A missile into the project of a combat missile with a flight range twice that of the R-2 missile, to assign it the index R-5 and to postpone the start of its flight tests to 1952. At the same time, a preliminary design of the missile with a new warhead was presented.



Missiles of NII-88 S.P. Korolev - R-1, R-2, R-3 and R-5M

Author: DIMMI Created: 15.08.2010 23:28:05 Comments: 27 READ THE FULL ARTICLE

RS-22 / RT-23 - SS-24 SCALPEL

DATA FOR 2023 (in progress)
BZHRK, missile 15Zh43 / RT-22
Complex 15P044 / RS-22, missile 15Zh44 / RT-23 - SS-24 SCALPEL
Complex 15P952 / RS-22A, missile 15Zh52 / RT-23 - SS-24 mod.1 SCALPEL
★★★

An intercontinental ballistic missile with solid-fuel engines in different basing options. Developed by the Yuzhnoye Design Bureau (Dnepropetrovsk) under the leadership of General Designer V.F. Utkin.

During 1966-1974, the Yuzhnoye Design Bureau released 7 preliminary designs, preliminary designs, and developments of solid-fuel missile projects, including the Garantiya research and development project and work on the RT-21 (15Zh41) and RT-22 (15Zh43) missiles.

In 1966-1967, OKB-586 (Yuzhnoye Design Bureau) conducted design research on the development of a combat railway missile system (BZhRK) with the R-12 missile. The project envisaged the creation of a special train of 20 cars, six of which were simultaneously a transport vehicle and a launcher for missiles. It was assumed that the BRZhK would provide the ability to covertly maneuver a missile formation on combat duty. However, the work did not progress beyond the design stage at that time. As rocket production developed, the possibility of creating a BZhRK applicable to the solid-fuel missiles RT-40, RT-2, RT-20. The project for a missile system with a solid- fuel three-stage silo- and rail-based ICBM RT-21 (15Zh41) was developed in the first half of the 1960s at Yuzhnoye Design Bureau. The project, like the previous ones, was not implemented. In the second half of the 1960s, a project of a mobile combat railway missile system with an RT-22 missile was developed on its basis, which was also not completed. In the late 1960s, information appeared about the development in the USA of a project of a railway train for launching Minuteman-type ICBMs, which gave a start to work on a mobile combat railway missile system with an RT-23 missile.

The order of the Minister of General Machine Building of the USSR "On the creation of a mobile combat railway missile system (BZhRK) with an RT-23 missile" was signed on January 13, 1969, after the development of a missile system with an RT-20P missile was terminated at the Yuzhnoye Design Bureau. The Yuzhnoye Design Bureau became the lead developer of the system and the missile for it. The BZhRK was to form the basis of the retaliatory strike group, since it had increased survivability and could with a high probability survive the enemy's first strike. This basing method ensured high mobility for the missile system. It was believed that it would be difficult to track down the BZhRK continuously running along the country's extensive railway lines, clogged with ordinary trains. The developed draft design raised a lot of objections from the military due to the possible vulnerability of the complex to sabotage and the difficulties in organizing rail traffic. Nevertheless, in October 1975, construction began at the Pavlograd Mechanical Plant.
solid-fuel motor assembly housings for the RT-23 ICBM.

In a separate article:
Complex 15P960 / RS-22B "Molodets", missile 15Zh60 / RT-23UTTH - SS-24 mod.2 SCALPEL
Complex 15P961 / RS-22B "Molodets", missile 15Zh61 / RT-23UTTH - SS-24 mod.2 SCALPEL
Complex "Tselina", missile 15Zh62 / RT-23UTTH

Launch of the 15Zh52 ICBM from the launch car of the BZhRK at the Plesetsk test site (https://nevskii-bastion.ru/, processed)

Author: DIMMI Created: 02.10.2011 21:19:32 Comments: 410 READ THE FULL ARTICLE

UR-100N / 15A30, UR-100N UTTH / 15A35 - SS-19 STILETTO

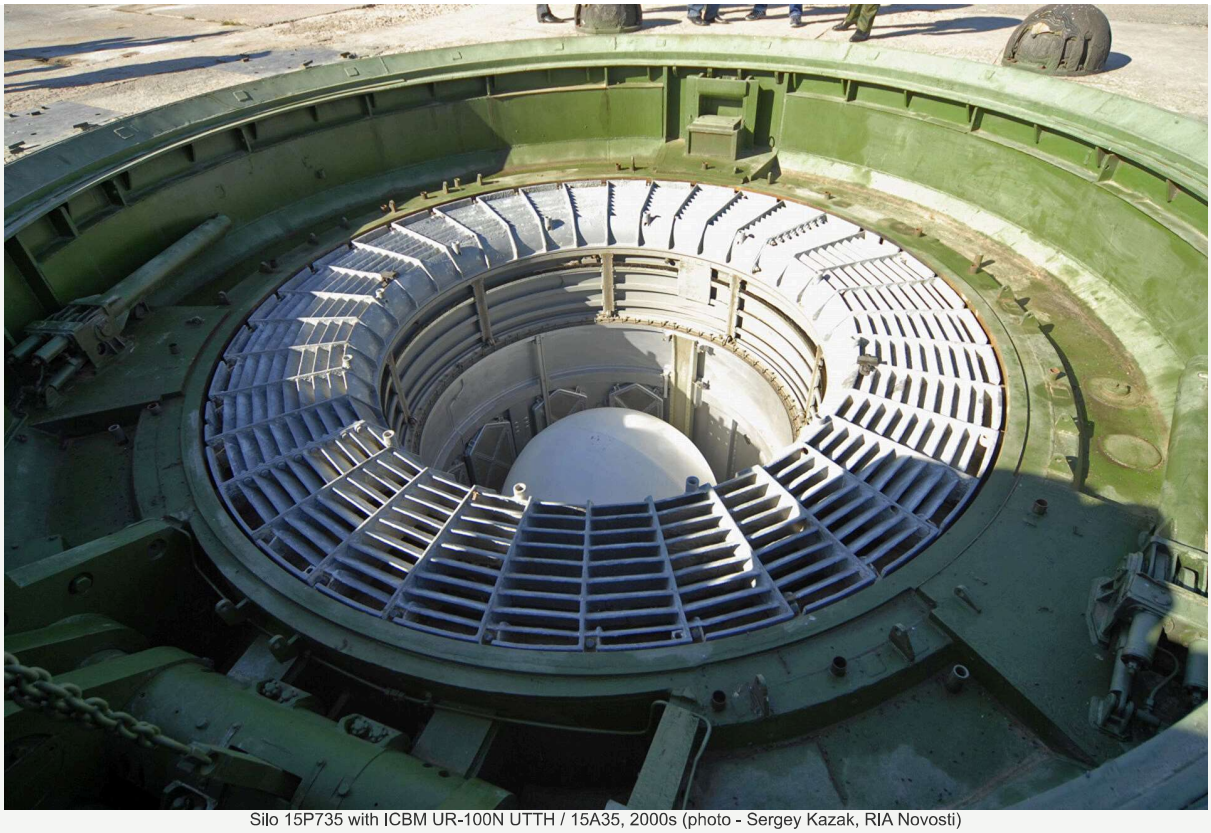
DATA AS OF 2023 (standard replenishment)
Complex 15P030, missile UR-100N / 15A30 / RS-18A - SS-19 mod.1 / mod.2 STILETTO
Complex 15P030P, missile UR-100N / 15A30
Complex 15P035 / 15P135, missile UR-100N UTTKh / 15A35 / RS-18B - SS-19 mod.3 STILETTO
★★★★

Intercontinental ballistic missile (ICBM) with a multiple reentry vehicle with six independently targetable warheads (MIRV). Developed by Branch No. 1 (chief designer - V.N. Bugaisky, leading designer - Yuri Dyachenko) of TsKBM / OKB-52 (since 2007 NPO Mashinostroyeniya) under the general supervision of V.N. Chelomey. In August 1969, a meeting of the USSR Defense Council was held under the chairmanship of L.I. Brezhnev, at which the prospects for the development of the USSR Strategic Missile Forces were discussed and proposals by the Yuzhnoye Design Bureau regarding the modernization of the R-36M and UR-100 missile systems already in service were approved. The TsKBM-proposed scheme for the modernization of the UR-100 system - the creation of a new UR-100N missile system - was also supported. The development of the ICBM began on September 2, 1969, and on August 19, 1970, the USSR Council of Ministers issued Resolution No. 682-218 on the development of the UR-100N/15A30 missile system with "the heaviest missile among the light ICBMs" (the term adopted in the treaties). The MR-UR-100 ICBM was created at the Yuzhnoye Design Bureau on a competitive basis with the UR-100N system. The UR-100N and MR-UR-100 systems were proposed to replace the UR-100/8K84 light ICBM family, accepted into service by the Strategic Missile Forces in 1967 and deployed in large numbers - the maximum number of UR-100 ICBMs, 1,030 units, was reached in 1974.

By order of V. N. Chelomey, the work on the rocket was divided into the following at the Central Design Bureau:
- cruise stages, test articles, coupling the rocket with the transport and launch vehicle and launcher silos, issuance of drawings to the Khrunichev Plant in December 1970 - Branch No. 1 of the Central Design Bureau (Head - V. N. Bugaisky);
- an autonomous unit with a separating warhead and a rocket control system with the issuance of working documentation to the plant in December 1970 - Central Design Bureau (Deputy General Designer A. I. Eidis);
- a transport and launch container, coupling with a complex of ground equipment and a launcher with the issuance of documentation to the Omsk Aviation Plant in December 1970 - Central Design Bureau (Deputy General Designer V. M. Baryshev);
- coupling of work on the creation of the positional area of the UR-100N missile system - Branch No. 1 of the Central Design Bureau.

To provide technical guidance and coordination of work at the Central Design Bureau of Machine Building, by order of the General Designer dated 20.10.1970, B.M. Denisov was appointed chief leading designer for the warhead of the UR-100N missile, and on 30.10.1970, V.Yu. Gasyunas was included in his group as leading designers for the body, technical documentation and production, and V.G. Bidenko for onboard units, ground equipment and testing.

During the development process, the following cooperation of enterprises was formed:
- OKB-52 (V.N. Chelomey) - lead design bureau for the complex and the missile;
- NPO Elektropribor (V.G. Sergeev, NPO Khartron, Kharkov) - control system;
- KBKhM (A.D. Konopatov, Voronezh) - main and steering liquid-propellant rocket engines of the missile's cruise stages;
- Central Design Bureau of Mechanical Engineering (V.M. Baryshev, Moscow) - highly protected silos;
- VNIIP (O.N. Tikhane) - development of a warhead with a thermonuclear charge.



Silo 15P735 with ICBM UR-100N UTTH / 15A35, 2000s (photo - Sergey Kazak, RIA Novosti)

Author: DIMMI Created: 15.03.2023 21:41:16 Comments: 1 READ THE FULL ARTICLE

Complex 15P159 Courier, missile 15Zh59 - SS-X-26

DATA AS OF 2023 (standard replenishment)
Complex 15P159 "Kurier", missile 15Zh59 - SS-X-26

Mobile small-sized intercontinental missile / mobile ground missile system (PGRK). The development of the complex and the missile was carried out by the Moscow Institute of Thermal Engineering under the supervision of A.D. Nadiradze, since 1987 the chief designer is B.N. Lagutin. Development of the complex was started on the initiative of the Commander of the Strategic Missile Forces V.F. Tolubko in response to the development of the MGM-134 "Midgetman" ICBM in the USA in accordance with the Resolution of the CPSU Central Committee and the USSR Council of Ministers dated July 21, 1983 No. 696-213. The preliminary design of the ICBM (the name at the early design stage is “Temp-SM”) was completed in 1984. The development of the preliminary design for the theme “Temp-SM” was carried out by the 11th department of MIT, headed by N.V. Karyagin. At the R&D stage, Department No. 6 of MIT (A.K. Vinogradov, later - L.S. Solomonov) was responsible for the complex, and Department No. 1 of MIT (V.I. Gogolev, later - Yu.V. Solomonov) was responsible for the rocket.

The production of the experimental batch of missiles for testing was carried out at the Votkinsk Machine-Building Plant. It was also planned to launch serial production of the missile there.

The 15U160 test launcher on the MAZ-7909 chassis was tested with mock-up missile prototypes at the Kapustin Yar test site in 1989-1990. Between March 1989 and May 1991, 4 missile mock-up launches (IRS - test missile projectile) were performed at the Plesetsk test site during testing of the launch automation and self-propelled launcher according to a simplified cyclogram with a lightweight first-stage engine.

By 1991, the final 5-axle version of the 15U160M SPU complex had been developed, and production of SPU prototypes had begun on the "Barrikady" code (Volgograd). Flight tests of the missile were planned to begin in the summer of 1992, but due to the termination of the development of the Midgetman ICBM in the United States, on October 5, 1991, M.S. Gorbachev announced the termination of the development of the Kurier complex.

Self-propelled launcher 15U160M of the 15P159 "Courier" missile system in the museum exposition of the Kapustin Yar test site, 2021 (photo - user "Sluchayny" of the forum http://militaryrussia.ru/)

Author: DIMMI Created: 18.01.2011 23:30:09 Comments: 221 READ THE FULL ARTICLE

RT-2PM2, 15Zh55 / 15Zh65 Universal - SS-27 SICKLE-B

DATA FOR 2023 (standard update)
R&D "Universal", complex 15P065, missile RT-2PM2, 15Zh55 / 15Zh65 - SS-X-27 SICKLE-B
★★★

Project of a universal intercontinental ballistic missile (ICBM for silo and mobile basing) developed by the Yuzhnoye Design Bureau (Dnepropetrovsk, general designer - V.F. Utkin) and the Moscow Institute of Thermal Engineering (MIT, chief designers - Boris Nikolaevich Lagutin and Yuri Semenovich Solomonov, in different years, source). Development of the silo version of the ICBM began in 1984 (*source - Morozov*).

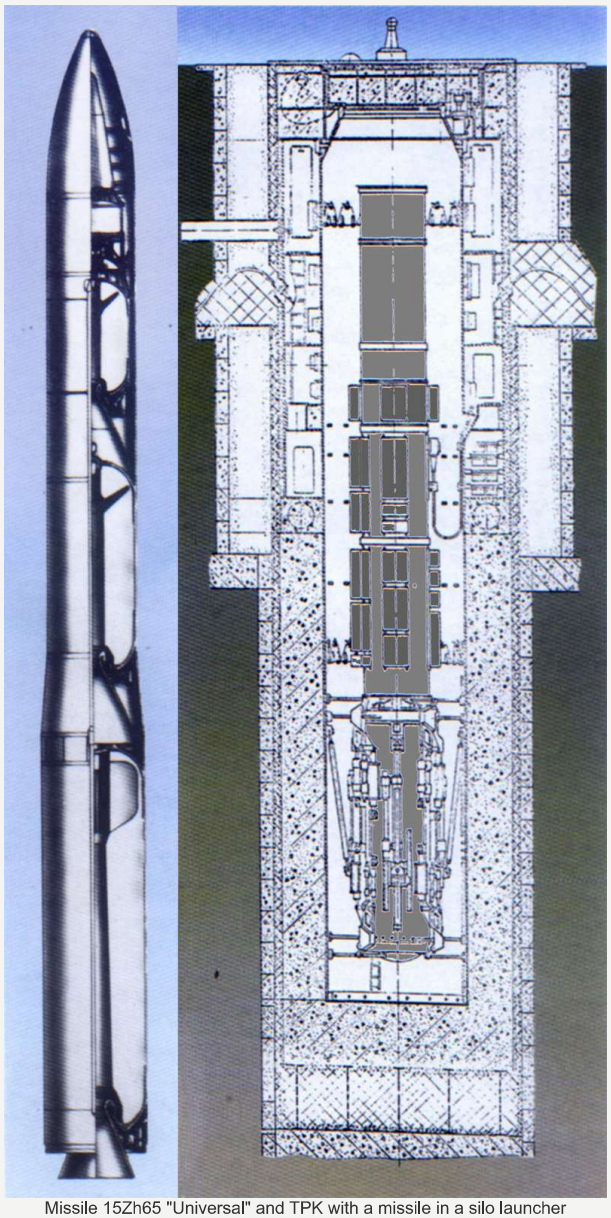
By Resolution of the Council of Ministers of the USSR No. 173-45 of February 9, 1987, it was prescribed to begin simultaneously at NPO Mashinostroyeniya (Reutov, the Albatross project), at the Yuzhnoye Design Bureau (Dnepropetrovsk) and at the Moscow Institute of Thermal Engineering work on developing advanced ICBMs with the ability to overcome the multi-echelon missile defense system of a potential enemy with universal basing - with launch options from silo launchers and in the form of a PGRK (*source - Strategic missiles, source*).

To comply with the requirements of the START-1 Treaty and as a conditional modernization of the RT-2PM ICBM according to the Universal research work, a solid-fuel ICBM with a single-block warhead in the PGRK and silo launcher variants was developed at the Yuzhnoye Design Bureau. At the same time, work was underway at MIT on the Topol-M R&D project - the development of an ICBM to replace the Topol ICBM with two types of basing - a ground-launched missile system and a silo launcher. In August 1988, Yu. S. Solomonov (MIT) held talks with the Yuzhnoye Design Bureau, as a result of which, by the end of 1988, the two design bureaus had jointly developed a technical proposal for a single missile within the framework of the Universal R&D project (*historical - Strategic Missiles*).

Joint full-scale development of the RT-2PM2 missile on the Universal research project was started by MIT and Yuzhnoye Design Bureau by decision of the Military-Industrial Complex under the USSR Council of Ministers No. 323 of September 9, 1989 and by order of the USSR Minister of General Machine Building No. 222 of September 22, 1989. The design was planned to be completed by the end of 1991 in two versions:
1) a missile with a platform for distributing unguided warheads with solid-propellant rocket engines and without a missile defense overcoming means complex (MBC) - developer MIT (mobile missile complex, PGRK)
2) a missile with a platform for distributing warheads with a monopropellant liquid rocket engine and with MBC - developer - Yuzhnoye Design Bureau (Dnepropetrovsk, silo missile complex 15P065 with a missile 8Zh65 / 15Zh65).

Due to a number of reasons of the production nature of the missiles, the design of the TPK differed and therefore had some differences and received different indexes - 15Zh55 for the PGRK and 15Zh65 for the SHPU (*history - Strategic missiles*).

The development of the 1st stage, the version of the platform for distributing the BB on monopropellant and the nose cone of the missile was carried out by the Yuzhnoye Design Bureau, the development of the 2nd and 3rd stages, the instrument compartment,MIT developed its own version of the platform for separating the BB and the unguided warhead. The engine for the 1st stage was also developed by the Yuzhnoye Design Bureau (*ist. - Missiles and spacecraft* , *Strategic missiles*). On December 29, 1989, the joint preliminary design of the missile and silo version of the missile complex was successfully defended (*ist. - Utkin*). The development of design documentation began. In the first half of 1990, the preliminary design of the PGRK was released (*ist. - Strategic missiles*).



Missile 15Zh65 "Universal" and TPK with a missile in a silo launcher
(Missiles and spacecraft of the Yuzhnoye design bureau. Dnepropetrovsk, Yuzhnoye State Design Bureau, 2000)

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